

We claim:

1. An immortalized cell line of murine hypothalamic neuronal cells comprising a gene encoding polyoma virus large T antigen operably linked to a promoter and expressing a marker selected from the group consisting of 5 neuropeptide Y, gonadotropin-releasing hormone, growth-hormone releasing hormone (GHRH), TenM 1, 2, 3, 4, arginine vasopressin (AVP), thyrotropin-releasing hormone (TRH), SOCS-3, urocortin, melanocortin-concentrating hormone (MCH), orexin, dopamine transporter, corticotrophin-releasing factor 10 (CRF), gonadotropin releasing hormone receptor, tryptophan hydroxylase, tyrosine hydroxylase, galanin, proopiomelanocortin (POMC), proglucagon, neurotensin, somatostatin, agouti-related protein, cocaine and amphetamine-regulated transcript (CART), leptin, oxytocin, corticotrophin-releasing factor receptor 1 and 2, aromatase, ghrelin, growth hormone secretagogue receptor, 15 androgen receptor, estrogen receptor α , estrogen receptor β , leptin receptor, melanocortin-concentrating hormone receptor 3 and 4, neuropeptide Y receptor Y1, neuropeptide Y receptor Y2, calcitonin receptor like receptor, glucagon-like peptide 1 receptor, glucagon-like peptide 2 receptor (Glp-2 receptor), and neurotensin receptor.
- 20 2. A mixed cell population comprising the immortalized cell line of claim 1.
3. The immortalized cell line of claim 1 wherein the marker is Glp-2 receptor.
- 25 4. The immortalized cell line of claim 1 wherein the marker is neurotensin.
5. The immortalized cell line of claim 1 wherein the marker is proopiomelanocortin (POMC).
- 30 6. The immortalized cell line of claim 1 wherein the marker is neuropeptide Y (NPY).

7. The immortalized cell line of claim 1 wherein the marker is proglucagon.
- 5 8. The immortalized cell line of claim 1 wherein the marker is growth-hormone releasing hormone.
9. The immortalized cell line of claim 1 wherein the marker is urocortin.
- 10 10. The immortalized cell line of claim 1 wherein the marker is melanocortin-concentrating hormone.
11. The immortalized cell line of claim 1 wherein the marker is TenM 4.
- 15 12. The immortalized cell line of claim 1 wherein the marker is growth hormone secretagogue receptor.
13. The immortalized cell line of claim 1 wherein the marker is ghrelin.
- 20 14. An immortalized cell line of claim 1 prepared by the method comprising:
 - (i) preparing a culture of embryonic hypothalamic cells;
 - (ii) infecting said culture with a retrovirus encoding a viral oncogene, operably linked to a promoter and a selectable marker;
 - 25 (iii) isolating transfected cells from non-transfected cells to obtain a culture of immortalized hypothalamic cells;
 - (iv) subcloning said immortalized cells into sub-cloned populations;
 - (v) screening said subcloned populations for expression of specific neuronal markers; and
 - 30 (vi) selecting and further cloning a specific population.

15. A method of obtaining a neuropeptide comprising, culturing the cell line of claim 1 that is known to express said neuropeptide and isolating the expressed neuropeptide.

5 16. A method for identifying a modulator of a neuropeptide comprising:

- (i) providing a cell line as defined in claim 1;
- (ii) incubating the cell line in the presence of the candidate modulator; and
- (iii) determining the biological effect of said candidate modulator,

10 wherein said candidate is a modulator if it modulates the neuropeptide expression and/or activity.

17. The method of claim 15 wherein said effect of said candidate modulator can be determined by one of the following methods:

- 15 (a) monitoring effects on neuropeptide expression;
- (b) incubating the said cell line with a substrate of a neuropeptide and monitoring the effect on substrate metabolites;
- (c) binding assays; or
- (d) proteomic profiling in the presence and absence of the said candidate modulator.

20 18. An immortalized cell line of murine hypothalamic neuronal cells that is responsive to a teneurin C-terminal-associated peptide [TCAP].

25 19. The cell line of claim 16 wherein the teneurin C-terminal-associated peptide is selected from the group consisting of SEQ ID NOs 1-9.

20. The cell line of claim 16 wherein the teneurin C-terminal-associated peptide is murine TCAP-1 or TCAP-3.

30 21. The cell line of claim 16 wherein the cell line is selected from the group consisting of N-7, N-22, N-29 and N-38.